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DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
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HEALTH SERVICES ADMINISTRATION
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**HEALTH PROBLEMS
OF THE ALASKA NATIVES**

**SUICIDE MORTALITY
AND MORBIDITY**

ALASKA AREA NATIVE HEALTH SERVICE
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HEALTH PROBLEMS OF THE ALASKA NATIVES: SUICIDE MORTALITY AND MORBIDITY

The recent history of Alaska Native health problems has shown a marked increase in problems relating to the mental health of the population. Suicide or attempted suicide looms as one of the greatest of these problems. Of the 69 selected cause of death categories reported by the Public Health Service, suicide was second only to non-motor vehicle accidents as the leading cause of death among Alaska Natives between 1974 and 1976. During that period, there were 74 recorded suicide deaths among Alaska Natives.

Although suicide is also a major problem for the entire U.S. population, it cannot be assumed that the problem among Alaska Natives follows the same pattern or is derived from the same causes as that of the rest of the country. Patterns of suicide, like other mental health problems, are more closely related to cultural or environmental rather than biological factors. There is then, a potential for great variation in patterns of suicide in a unique setting such as occurs for Alaska Natives. The purpose of this statistical report is to identify the unique aspects of the suicide trend among Alaska Natives in order to provide needed information for designing methods of treating the problem.

Sources. Data for this report are from several sources. Most of the mortality data for Alaska Natives comes from special vital statistics reports provided to the Indian Health Service by the National Center for Health Statistics. Additionally, some mortality figures reported by Kraus (N.D.) are used for certain years prior to 1970 for which complete data were not readily available from IHS sources. Morbidity data are from the Indian Health Service Inpatient/Outpatient Reporting System reports. Data for the U.S. are from vital statistics reports put out by the National Center for Health Statistics and from Bureau of the Census reports.

Accuracy. The determination of suicide as a cause of death or injury is not always a clear-cut decision. Suicide deaths where no note is found may be reported as being accidental. This may also be the case for attempted suicides where the injured person can and does disguise the cause. Because of the tendency towards under-reporting, recorded rates should be interpreted as conservative estimates of the actual prevalence of suicides and attempted suicides. In addition, longitudinal comparisons and comparison of Alaska Native rates to rates for the total U.S. are accurate only to the extent that completeness of reporting has remained constant over time and across the U.S.

In reporting mortality, there is also some inaccuracy in the identification of individuals as being Alaska Natives. Race is reported as determined by the person completing the death certificate and is usually but not always, based on information provided by the next of kin. The bias is usually toward reporting Alaska Native deaths as "white".

The accuracy of Alaska Native population estimates is an important consideration as well since they are the basis from which prevalence rates are calculated. Inaccuracies may affect conclusions regarding changes over time or comparisons to other populations. When over-time comparisons are being made, as in this study, the population estimates must be consistent as well as accurate. That is, they should reflect true growth trends as much as possible and show no artificially abrupt changes in population. Official IHS population figures for the 1970's, because of a change in methodology, show an unrealistic population increase for Alaska Natives in 1975 and so are not appropriate for studying longitudinal trends. For this study, official population estimates are used for the years 1950 through 1960, after which estimates were calculated by adding births and subtracting deaths occurring each year. This method produces figures which are close to the official figures for the mid-seventies and at the same time provides a more appropriate series of yearly estimates for making rate comparisons.

Suicide Mortality

1951-1975 trend. Suicide death rates for the period 1951-1975 are graphed in Figure 1 for Alaska Natives as well as for all U.S. Indians and Alaska Natives and for all races in the U.S. (Crude death rates are used here in order to present a general overall picture of the problem. The effects of population composition on these rates are considered later.) In the 1950's, suicide deaths, averaging 5 per year, were a relatively insignificant problem for Alaska Natives. The suicide death rate fell way below the ten leading causes of death at that time. Since then however, suicide has risen to become the second leading cause of death for Alaskan Natives. Although its current prominence is due in part to the relative decline of problems such as tuberculosis, the suicide rate itself has increased dramatically during the 25 year period, as can be seen from the graph. A critical point in the Alaska Native trend appears to occur in the middle sixties. Prior to that time the suicide rate showed no consistent variation and was at about the same level as that for all Indians and the U.S. as a whole. After that however, a fairly continuous increase is evident, such that the rate in the mid-seventies is well over twice that of the fifties and early sixties. Suicide for all Indians and Alaska Natives combined (of which Alaska Native deaths comprise an average of roughly 15 percent) show the same trend but to a lesser degree. The U.S. total figures are considerably lower and show only a gradual increase.

Age-specific and age-adjusted rates. For the total U.S. population, the suicide rate tends to increase in relation to age. This does not appear to be the case for Alaska Natives. Figure 2 presents age-specific suicide rates for Alaska Natives from 1960-74. The yearly data were aggregated into three five-year groups since the numbers of deaths in the different age groups for one year are generally too small to make adequate comparisons. Comparable data for the total U.S. in 1973 are also presented.

It can be seen from the graph that the highest suicide rates among Alaska Natives occur in the 15-24 and the 25-34 year age groups and that the greatest increases over time have also occurred in these two groups. The high rates in these two age groups plus the fact that the at-risk population in these groups is relatively large (31 percent of Alaska Natives were between the ages of 15 and 35 in 1970) accounts for a great deal of the difference between the crude suicide rates for Alaska Natives and the rate for the U.S. as a whole.

The greater prevalence of suicide that occurs among Alaska Natives as compared to the total U.S., even after considering differences in age structure, can be illustrated by calculating age-adjusted mortality rates. Applying the 1965-1975 average annual age-specific rates for the Alaska Native population to the age distribution of the total U.S. in 1970 gives an age-adjusted rate of 29.4 suicide deaths per 100,000 population. This compares to a figure of 11.6 for the U.S. population as a whole in 1970. (U.S. rate is not an average figure but is for the single year 1970). The combined Indian Alaska Native age-adjusted rate for 1970 was 17.6, indicating that the magnitude of the problem for Alaska Natives is greater than that for other Indians in the U.S. as well

Sex differences. Sex-specific suicide death rates for Alaska Natives are presented in Table 1. As can be seen from the table, suicide is much more prevalent among males than among females. These rates compare to U.S. total rates in 1973 of 6.5 for females and 17.6 for males. Among the Alaska Natives, there has been some decline in the male-female imbalance over time, with most of the change occurring between the fifties and sixties.

Another way of comparing male and female suicide is to look at the proportion of the total suicides which are either male or female. This has the effect of isolating male-female differences so that they can be more easily compared over time or across populations. In addition these proportions can be standardized, as in the manner of calculating age or sex-adjusted suicide rates, in order to compensate for differences in the underlying sex distributions of the populations being compared. These data are presented for Alaska Natives in Table 2 along with comparable data for the total U.S.

The table shows that the proportion of Alaska Native suicides that are male has dropped slightly over the last two and one half decades to to an average of just over 70 percent so far in the seventies. This figure is very close to the 1973 figure of 72 percent for the total U.S., suggesting that the patterns in the two populations are very similar. Breaking the data down by three major age groups however, reveals substantial differences between the Alaska Native and total U.S. population. Among Alaska Natives, the proportion of male suicides increases with age, becoming almost exclusively male in the over 45 year old group (there was only one female suicide in the 45+ age category during the 1970-76 period). On the other hand figures for the total U.S. show the highest proportion of male suicides occurring in the youngest age group. Thus another essential difference between suicides among Alaska Natives as compared to

the U.S. total population can be found in the sex distribution of the suicide deaths.

Suicide method. Based on data for the years 1974-1976, violent, abrupt methods were most commonly used in completing suicide among Alaska Natives. Death by firearms, explosives or hanging accounted for 82 percent of the total deaths over the three year period. Males used these methods more than did females. Although females also used these methods most often, they showed a greater tendency than males to resort to poisoning.

Service Unit differences. Table 3 presents Alaska Native suicide rates by Service Unit for the period 1971-1976. Although some of the rates should be interpreted with caution due to the small numbers of deaths involved, the data clearly show major variations across the state. Kotzebue and Interior Alaska Service Units had the highest rates while Barrow, Bethel, and Kanakanak Service Units had the lowest. Differences among Alaska Native groups appear to be as great as the difference between all Alaska Natives and the total U.S.

Suicide Morbidity

This section will cover reported injuries resulting from suicide attempts among Alaska Natives. Data are for seven years starting in either fiscal year 1971 or 1972, depending on what years reports were available. Comparable data prior to that time are not readily available. Also, because of limitations on reports available from the IHS Inpatient/Outpatient Reporting System, only the first part of this section and the part on Service Unit differences deal with estimated total reported injuries. The remaining parts dealing with trends in sex, age, etc., are based only on partial data (e.g. IHS outpatient). Thus, they can be used to represent trends but not absolute magnitude and must be interpreted only as rough indicators of the trends as they would look if complete data were available.

Total reported morbidity. Estimates of the total reported suicide-related morbidity and morbidity rates for Alaska Natives are given in Table 4 for fiscal years 1971 through 1977. These figures are the sum totals of reported treatments of suicide-related injuries at IHS and contract inpatient facilities and IHS outpatient facilities, plus estimates of treatments at contract outpatient facilities. (The contract outpatient estimates were obtained by applying the contract to IHS inpatient ratios for each year to the IHS outpatient figure). Because contract outpatient figures had to be estimated, the total figures are only rough estimates of total reported suicide-related injuries. They are over-estimated to a certain extent in that the outpatient figures include multiple counts of the same injury whenever treatment on more than one date was required. In terms of total suicide attempts, actually occurring in the Alaska Native population, they are minimum estimates since they reflect only those injuries

serious enough to require professional treatment

Given the qualifications listed above, these data show that morbidity rates for Alaska Natives generally run from ten to twenty times greater than the corresponding mortality rates and suggest that suicide is a much greater problem than what was indicated by the mortality data alone. The morbidity and mortality trends during the 1970's are directly compared in Figure 3. The rates are graphed on semi-log paper which enables proportional changes in rates to be more readily detected. (It should be noted that the mortality figure for any particular fiscal year corresponds to the figure for the previous calendar year). The graph shows that while the average mortality rate showed a definite increase over the seven year period, the morbidity rate did not. Since suicide mortality can not be expressed as a simple constant proportion of total attempts over time, it may be possible that these two phenomena are operating more or less independently of each other.

Age distribution. Figure 4 compares the age distribution of suicide morbidity to that of mortality among Alaska Natives during fiscal years 1972-1978. (Data reported are for IHS outpatient facilities). It can be seen that the distributions are roughly the same indicating that no particular age group is more prone than any other to be characterized by attempted rather than completed suicides.

Sex distribution. The breakdown of suicide related morbidity by sex for FY 1972-1978 differs from that for mortality in two regards. First although females accounted for less than 30 percent of completed suicides, they comprised 66 percent of the attempted suicides. Also, the proportion of attempts by females increases with age whereas the opposite was true for mortality. Approximately 65 percent of suicide attemptors under the age of 35 were female and the figure for those 35 and over was 75 percent. It appears that females are more prone to attempt suicides than males but males are more likely to actually be "successful" in the attempt, especially in the older age groups.

Methods used in attempt. Based on IHS and contract inpatient data, poisoning was the primary method used in suicide attempts among Alaska Natives between FY 1971 and FY 1977. It accounted for 68 percent of the total attempts. Use of cutting or piercing instruments accounted for 20 percent of the total, the use of firearms, explosives, hangings and strangulations for another 10 percent and all other methods for the remaining 2 percent. This pattern of methods used in attempted suicides differs substantially from that for suicide mortality. In particular, the use of firearms etc., which are the most violent and irreversible of the methods, accounts for only 10 percent of the morbidity but over 80 percent of the mortality. Nearly the opposite situation is true for the use of poisons. This indicates that the effects of poisons are routinely being reversed or else the dosages were not lethal to begin with.

Role of alcohol. Although data on the role of alcohol in suicide mortality are not available, such information does exist for suicide-related injuries among Alaska Natives treated at IHS direct outpatient care facilities. The percent of these attempts which were alcohol related are graphed

in Figure 5 for FY 1971 through FY 1977. The percentage showed a definite increase during this time with an average for the seven year period of 50.0 percent. It is interesting that alcohol related attempts have increased while total attempts have remained more or less constant. While this may suggest a shift in the relative importance of different motives or causes for suicide attempts, the apparent change may be an artifact of reporting due primarily to the increased attention that has been placed on the problems of alcohol among Alaska Natives since 1970. Whether increasing or not, alcohol still appears to play an important role in attempted suicides, although causality can not be inferred from these data.

Service Unit differences. The average yearly estimated total suicide attempts and rate for the period FY 1971 to FY 1977 for each Service Unit in Alaska are reported in Table 5. Anchorage, Mt. Edgecumbe, Kotzebue and Barrow Service Units all reported high suicide morbidity rates while Kakanak, Interior Alaska, Norton Sound and Bethel Service Units were on the lower end. These rankings do not correspond closely to the previous rankings of mortality rates. Barrow, for example, had one of the lowest mortality rates but one of the highest morbidity rates. The opposite is true for Interior Alaska. Although these data suggest some important differences by Service Unit, it should be kept in mind that persons are not necessarily treated for injuries in the Service Unit in which they reside or in which the injury occurred.

Seasonal Variations. Figure 6 shows the percentage distribution of suicide related injury treatments (based on IHS outpatient data) broken down by month for FY 1972-1978. With the exception of the month of August a clear trend with a peak in December is shown.

Summary and Discussion

The above data have shown that attempted and completed suicides are most prevalent among younger Alaska Natives. Those completing suicide are typically males using the most violent methods while suicide attempts are more characterized by females using poisonous substances. Variation was also found in both morbidity and mortality rates on the Service Unit level.

The trends among Alaska Natives show both similarities and differences compared to the U.S. total population. They differ in two regards. First, the Alaska Natives have shown a definite upward trend in suicide mortality since the mid-sixties while the total U.S. trend has increased only slightly. The result is that crude suicide mortality rates for Alaska Natives are currently over three times the national average. Second, the age-sex distribution of suicides differ between the two populations. Suicide mortality rates decrease with age among Alaska Natives but increase for the total U.S. population. And while completed suicide is predominately a male phenomena among both populations, the male proportion is the highest in the older groups for Alaska Natives but in the youngest for the total U.S. population.

Similarities between the two populations appear in regard to the relationship between attempted and completed suicides. Differences in attempted versus completed suicides on the national level have lead various authors (e.g. Fabachnick 1967) to conclude that there are basic motivational differences behind lethal and non-lethal suicide gestures. That is, they are implying that the lethality of suicide attempts are deliberately predetermined (through choice of methods, timing, etc.) and thus completed and attempted suicides are two distinct phenomena. The current data regarding attempted/completed suicide differences by sex and method parallel the U.S. trends and suggest this same pattern is occurring among Alaska Natives as well. That attempted and completed suicides are independent acts is also supported by the findings here which show mortality but not morbidity to be increasing since 1970 and by the fact that there is no clear association of Service Unit rankings by mortality and morbidity rates.

The Alaska Native trends show even closer similarities to trends among all U.S. Indians, although the current suicide mortality rate for Alaska Natives is still well above the national average for all Indians and Alaska Natives combined. As with Alaska Natives the total U.S. Indian population shows the highest rates of suicide mortality among the younger age groups (Handler N.D.). Other studies of individual tribes also describe some of the same basic age-sex-method trends that are found among Alaska Natives. For example, the typical completed suicide among the Northwestern U.S. tribes has been characterized as being a young male who shot or hung himself while the typical suicide attemptor was a young female ingesting drugs in poisonous quantities (Shore 1971). This same basic pattern was also found in the Northern Cheyenne (Barter and Weist 1970). Not all tribes follow this pattern quite so closely. According to Levy (1965), males predominated in attempted as well as completed suicides among the Navajo. Probably the finding appearing most consistently in the various studies was the association of alcohol with suicide.

References

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TABLE 1. AVERAGE ANNUAL ALASKA NATIVE SEX-SPECIFIC SUICIDE MORTALITY RATES 1950-1959, 1960-1969, 1970-1976 *

YEARS	MALES		FEMALES	
	Total Deaths	Average Yrly.Rate	Total Deaths	Average Yrly.Rate
1950-1959	40	22.1	10	3.7
1960-1969	63	23.6	21	2.8
1970-1976	103	46.6	38	2.6

* Rates are per 100,000 population. Years indicated are calendar years.

TABLE 2. AVERAGE ANNUAL MALE SUICIDE DEATHS AS A PERCENT OF TOTAL SUICIDE DEATHS: ALASKA NATIVES 1950-1959, 1960-1969, 1970-1976 (By Age), AND THE U. S. TOTAL POPULATION 1973 (By Age) *

	Average Annual Percent Male	Average Annual Percent Male Adjusted to 1973 U.S. Population
<u>Alaska Natives</u>		
<u>1950-1959</u>	<u>.79</u>	<u>.78</u>
<u>1960-1969</u>	<u>.75</u>	<u>.73</u>
<u>1970-1976</u> (total)	<u>.73</u>	<u>.71</u>
0-24 years	.68	.68
25-44 years	.76	.76
45+ years	.91	.89
<u>U. S. Total Population</u>		
<u>1973</u> (total)	<u>.72</u>	<u>.72</u>
0-24 years	.80	.80
25-44 years	.69	.69
45+ years	.71	.71

* Years indicated are calendar years.

TABLE 3. AVERAGE ANNUAL ALASKA NATIVE SUICIDE MORTALITY RATES
BY SERVICE UNIT 1971-1976 *

Service Unit	Average Annual Mortality Rate
Anchorage	28.0
Barrow	17.4
Bethel	16.2
Interior Alaska	65.3
Kanakanak	12.9
Kotzebue	60.5 **
Mt. Edgecumbe	32.7
Norton Sound	33.0 **

* Rates are per 100,000 population.

** Average rate for 1974-1976 only. The 1971-1976 average rate for Kotzebue and Norton Sound combined was 54.9.

TABLE 4. ESTIMATED TOTAL ALASKA NATIVE SUICIDE-RELATED MORBIDITY AND MORBIDITY RATES AS REPORTED AT IHS AND CONTRACT FACILITIES FY 1971-FY 1977 *

Year	Estimated No.Injuries	Rate
1971	258	443.1
1972	312	524.3
1973	362	595.5
1974	331	534.3
1975	329	520.1
1976	267	414.4
1977	325	494.4

* Rates are per 100,000 population

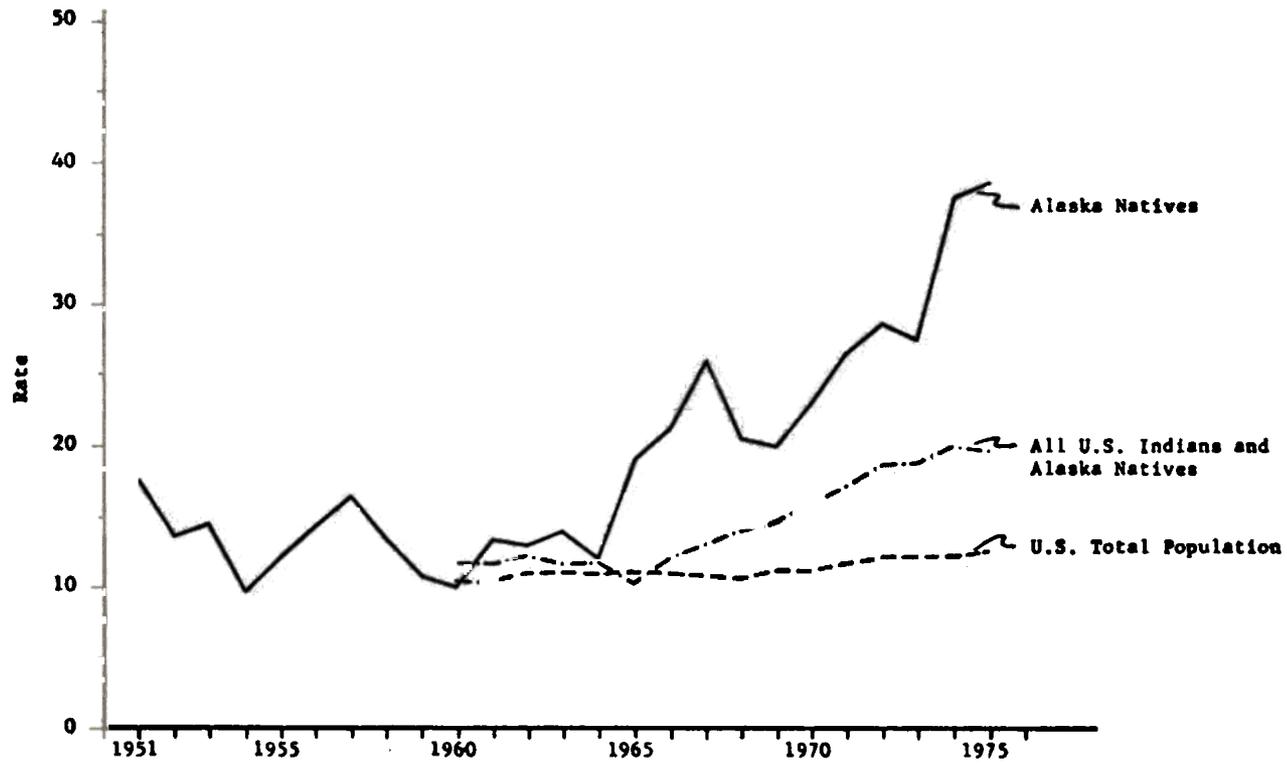
TABLE 5. AVERAGE ANNUAL ESTIMATED TOTAL SUICIDE-RELATED MORBIDITY RATES BY SERVICE UNIT FY 1971-FY 1977 *

Service Unit	Average Annual Morbidity Rate
Anchorage	864.7
Barrow	616.5
Bethel	290.7
Interior Alaska	213.2
Kanakanak	193.4
Kotzebue	869.3 **
Mt. Edgecumbe	650.7
Norton Sound	276.6 **

* Rates are per 100,000 population

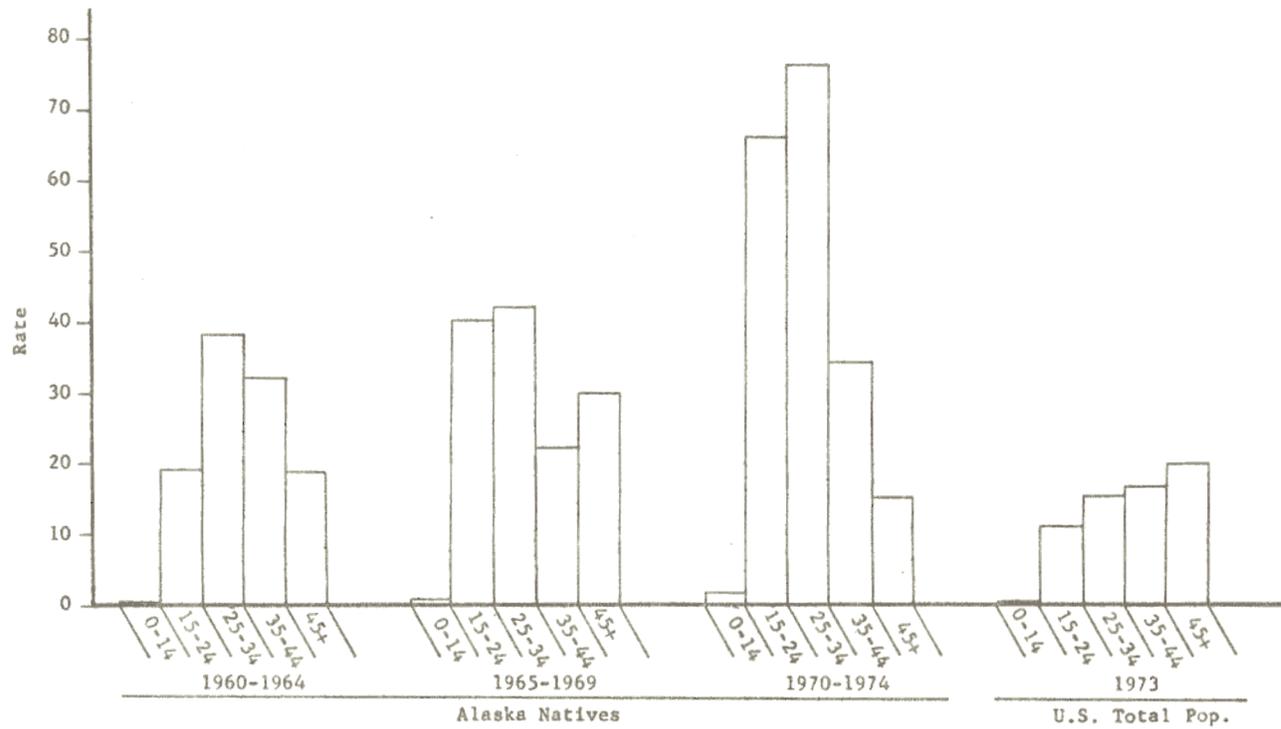
** Kotzebue figure is the rate for 1975-1977 only. Norton Sound figure is for 1976-1977, data for 1975 not being available. The 1971-1977 average rate for Kotzebue and Norton Sound combined was 426.3.

Figure 1. Crude Suicide Death Rates: Alaska Natives 1951-1975, All U.S. Indians and Alaska Natives 1960-1975, and the U.S. Total Population 1960-1975.*



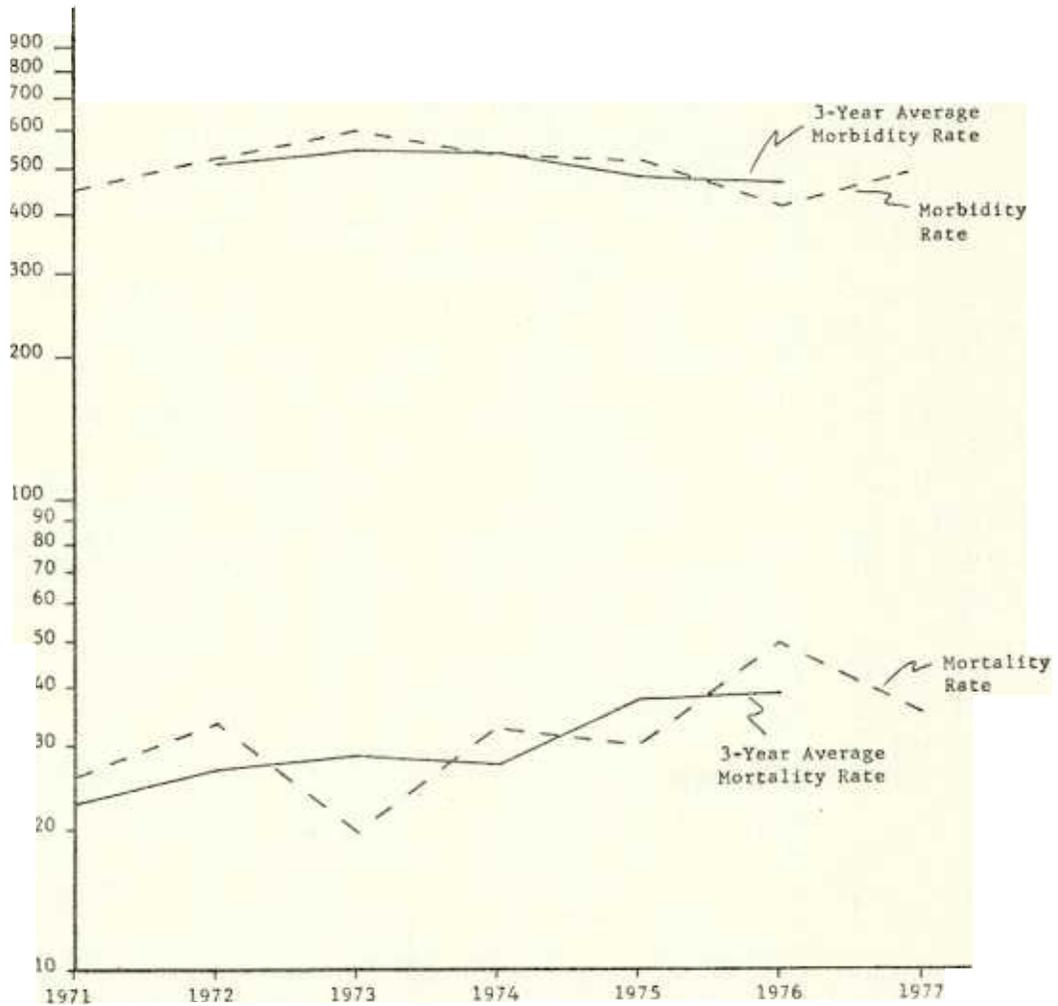
*Rates are per 100,000 population. Alaska Native and All U.S. Indians and Alaska Native rates are based on a 3-year moving average (e.g. 1975 average=deaths in 1974-1976). U.S. total rates are based on single year deaths. Years indicated are calendar years.

Figure 2. Average Yearly Age-Specific Suicide Rates: Alaska Natives 1960-1964, 1965-1969, 1970-1974, and the U.S. Total Population 1973.*



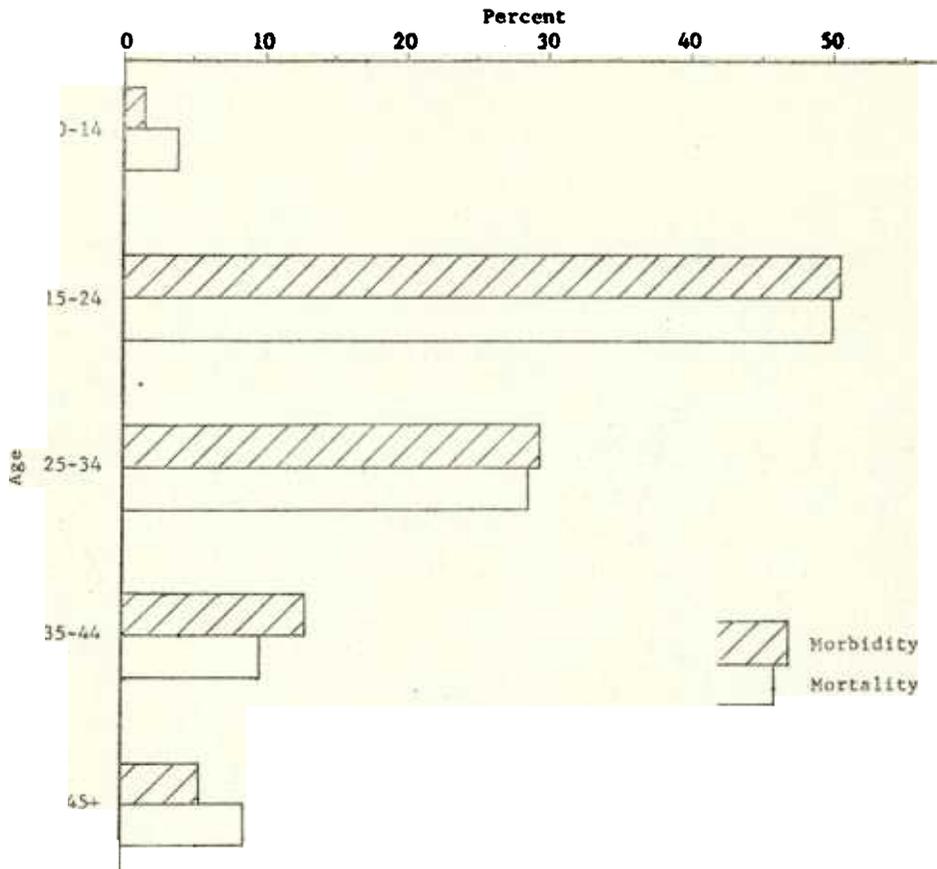
*Years indicated are calendar years. Rates are per 100,000 population.

Figure 3. Alaska Native Suicide Morbidity and Mortality Rates FY1971-FY1977.*



*Morbidity figures represent estimated total visits for treatment of suicide-related injuries. Rates are per 100,000 population.

Figure 4. Percentage Distribution by Age of Alaska Native Suicide Morbidity and Mortality FY1971-FY1977.*



*Morbidity data are for suicide-related injuries treated at IHS outpatient facilities.

Figure 5. Percent of Alaska Native Suicide-Related Morbidity Reported as Being Alcohol-Related FY1971-FY1977.*

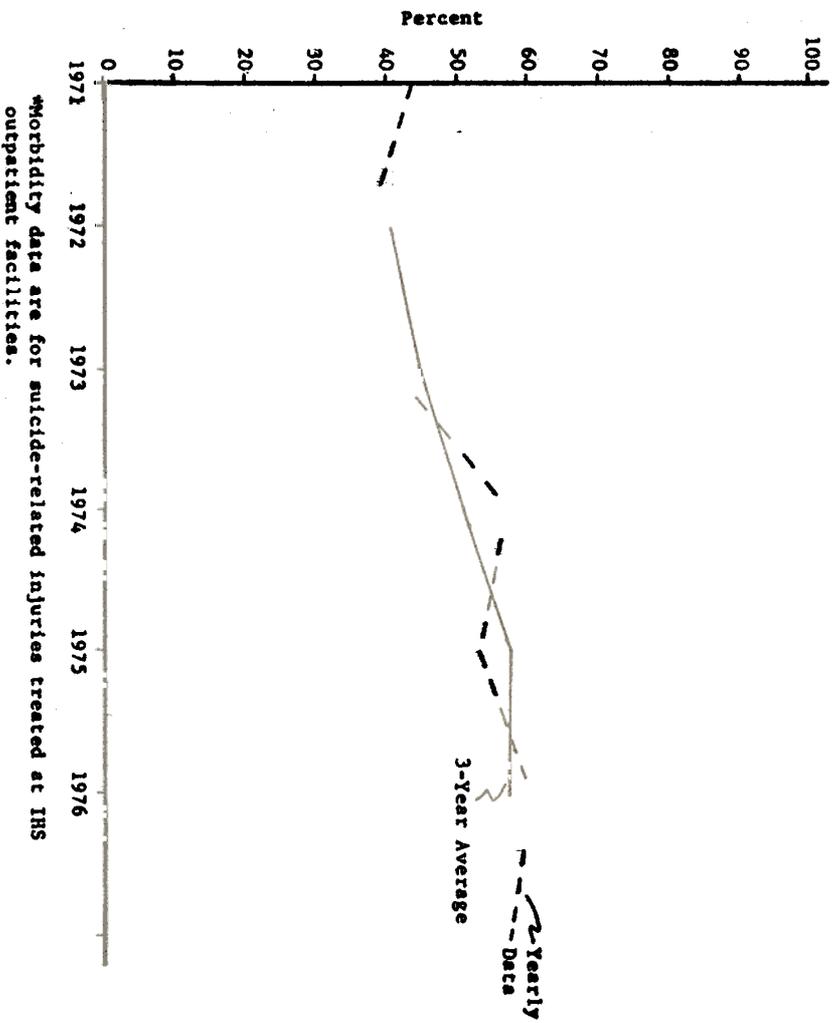
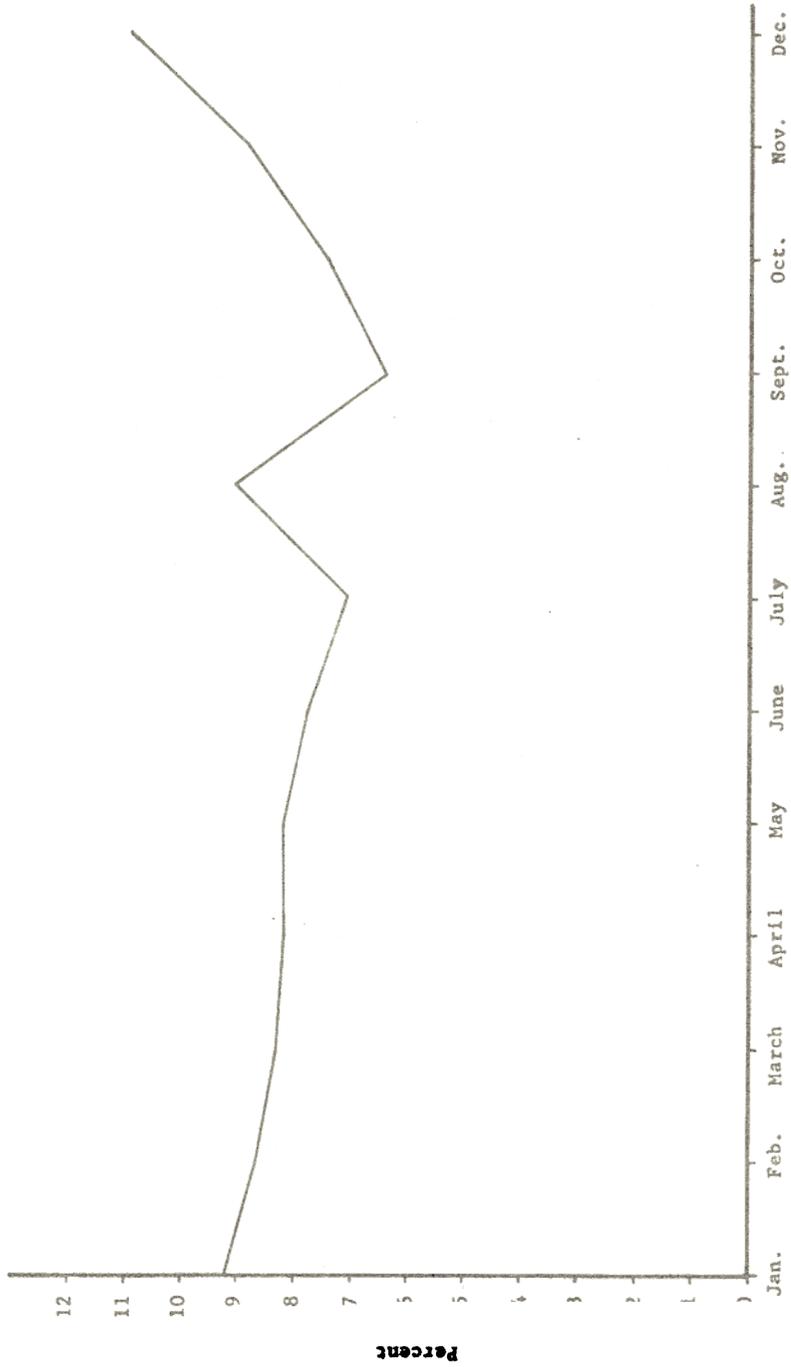


Figure 6. Percent of Alaska Native Suicide-Related Morbidity by Month, FY1972-FY1978 Average.



Morbidity data are for suicide-related injuries treated at IHS outpatient facilities.